

ENVIRONMENTAL ENGINEERING

Environmental Engineering applies engineering and scientific principles to protect and preserve human health and the environment. It embraces broad environmental concerns, including air and water quality, solid and hazardous wastes, groundwater protection and remediation, water resources management, environmental policy, radiological health, environmental biology and chemistry, systems ecology, water and wastewater treatment, and wetlands ecology.

About this Program

- **College:** Herbert Wertheim College of Engineering (<http://catalog.ufl.edu/UGRD/colleges-schools/UGENG/>)
- **Degree:** Bachelor of Science in Environmental Engineering
- **Credits for Degree:** 128

To graduate with this major, students must complete all university, college, and major requirements.

Department Information

The broad undergraduate environmental engineering curriculum of EES has earned the department a ranking as a leading undergraduate program. The ABET-accredited engineering bachelor's degree is comprehensively based on physical, chemical, and biological principles to solve environmental problems affecting air, land, and water resources. An advising scheme including select faculty, led by the undergraduate coordinator, guides each student through the program. Website (<https://www.essie.ufl.edu/environmental-engineering-sciences/>)

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Map (<http://campusmap.ufl.edu/#/index/0724>)

Curriculum

- Combination Degrees
- Environmental Engineering

Department Requirements

Before graduating, all students must take the Fundamentals of Engineering Exam, which is the first exam leading to professional licensure as an engineer.

Qualified students are encouraged to pursue master's and doctoral studies to increase their knowledge and broaden their employment opportunities.

Educational Objectives

Environmental engineering graduates will continue to develop and apply their knowledge and skills to identify, prevent, and solve environmental problems. Evidence of achievement of this objective includes one or more of the following:

- Passing the Fundamentals of Engineering Examination
- Obtaining and maintaining a Professional Engineering License
- Admission to graduate school, including medical, law or other professional schools
- Completing educational and professional short courses

Program graduates can aspire to careers that benefit society as a result of their educational experiences in science, analysis and design, as well as in their social and cultural activities. Evidence of achievement of this objective includes the following:

- Employment as an engineer or in a related technical capacity
- Participating in professional organizations
- Providing community service

Program graduates will be able to communicate and work effectively in all work settings including those that are multidisciplinary. Evidence of achievement of this objective includes one or more of the following:

- Publication in scientific and engineering journals
- Presenting at scientific and engineering conferences
- Teaching
- Contributing to scientific and engineering studies
- Service as a task or team leader

Mission

The mission of the Department of Environmental Engineering Sciences (EES) is to provide quality undergraduate and graduate educational programs in environmental engineering sciences, to conduct an internationally recognized environmental research program that benefits humanity, and to provide authoritative guidance to individuals and organizations charged with preventing and solving local, state, national and global environmental problems. EES serves as a leader in interdisciplinary programs aimed at solving environmental problems and as a major on campus crucible for identification, conceptualization and resolution of environmental issues.

Critical Tracking

Critical Tracking records each student's progress in courses that are required for progress toward each major. Please note the critical-tracking requirements below on a per-semester basis.

Equivalent critical-tracking courses as determined by the State of Florida Common Course Prerequisites (<http://www.flvc.org/cpp/displayRecord.jsp?cip=141401&track=01>) may be used for transfer students.

Semester 1

- Complete 2 critical-tracking course (CHM 2045 or CHM 2095, CHM 2046 or CHM 2096, MAC 2311, MAC 2312, MAC 2313, MAP 2302, PHY 2048 and PHY 2049) with a minimum grade of C within two attempts, including withdrawals.
- 2.5 GPA on the best of a maximum of two attempts at each critical-tracking course
- 2.0 UF GPA required

Semester 2

- Complete 2 additional critical-tracking courses with a minimum grade of C within two attempts, including withdrawals

- 2.5 GPA on the best of a maximum of two attempts at each critical-tracking course
- 2.0 UF GPA required

Semester 3

- Complete 2 additional critical-tracking courses with minimum grades of C within two attempts, including withdrawals
- 2.5 GPA on the best of a maximum of two attempts at each critical-tracking course
- 2.0 UF GPA required

Semester 4

- Complete the remaining critical-tracking courses with minimum grades of C within two attempts, including withdrawals
- 2.5 GPA on the best of a maximum of two attempts at each critical-tracking course
- 2.0 UF GPA required

Semester 5

- Complete ENV 3002
- 2.0 UF GPA required

SEMESTER 6

- Complete ENV 4453
- 2.0 UF GPA required

SEMESTER 7

- Complete ENV 4454
- 2.0 UF GPA required

SEMESTER 8

- Complete ENV 4009
- 2.0 UF GPA required

Model Semester Plan

Students are expected to complete the general education International (GE-N) and Diversity (GE-D) requirements. This is often done concurrently with another general education requirement (typically, GE-C, H, or S).

To remain on track, students must complete the appropriate critical-tracking courses, which appear in bold. These courses must be completed by the terms as listed above in the Critical Tracking criteria.

This semester plan represents an example progression through the major. Actual courses and course order may be different depending on the student's academic record and scheduling availability of courses. Prerequisites still apply.

Course	Title	Credits
Semester One		
Quest 1 (Gen Ed Humanities)		3
Select one:		3
CHM 2045	General Chemistry 1 (Critical Tracking ; Gen Ed Physical Sciences)	
CHM 2095	Chemistry for Engineers 1 (Critical Tracking ; Gen Ed Physical Sciences)	
CHM 2045L	General Chemistry 1 Laboratory (Gen Ed Physical Sciences)	1

EGN 2020C	Engineering Design & Society	2
MAC 2311	Analytic Geometry and Calculus 1 (Critical Tracking ; State Core Gen Ed Mathematics)	4
Credits		13

Semester Two		
Select one:		3
CHM 2046	General Chemistry 2 (Critical Tracking ; Gen Ed Physical Sciences)	
CHM 2096	Chemistry for Engineers 2 (Critical Tracking ; Gen Ed Physical Sciences)	
CHM 2046L	General Chemistry 2 Laboratory (Gen Ed Physical Sciences)	1
Select one:		3
ENC 1101	Expository and Argumentative Writing (Gen Ed Composition)	
ENC 1102	Argument and Persuasion (Gen Ed Composition)	
MAC 2312	Analytic Geometry and Calculus 2 (Critical Tracking ; Gen Ed Mathematics)	4
State Core Gen Ed Humanities (http://catalog.ufl.edu/UGRD/academic-programs/general-education/#genedcoursestext)		3
Credits		14

Semester Three		
Quest 2 (Gen Ed Social and Behavioral Sciences)		3
ENC 3246	Professional Communication for Engineers (State Core Gen Ed Composition; minimum grade of C required)	3
ENV 2003	Introduction to Environmental Engineering	1
MAC 2313	Analytic Geometry and Calculus 3 (Critical Tracking ; Gen Ed Mathematics)	4
PHY 2048	Physics with Calculus 1 (Critical Tracking ; State Core Gen Ed Physical Sciences)	3
PHY 2048L	Laboratory for Physics with Calculus 1 (Gen Ed Physical Sciences)	1
Credits		15

Semester Four		
COP 2271	Computer Programming for Engineers	2
ENV 3001	Core 1: Introduction to Environmental Systems	4
EGM 2511	Engineering Mechanics: Statics	3
MAP 2302	Elementary Differential Equations (Critical Tracking)	3
PHY 2049	Physics with Calculus 2 (Critical Tracking)	3
PHY 2049L	Laboratory for Physics with Calculus 2	1
Credits		16

Summer After Semester Four		
CGN 3501C	Civil Engineering Materials	3-4
	or EMA 3010 or Materials	
State Core Gen Ed Social and Behavioral Sciences (http://catalog.ufl.edu/UGRD/academic-programs/general-education/#genedcoursestext)		3
Engineering graphics or geographic information systems elective		3
Credits		9-10

Semester Five		
CWR 3201	Hydrodynamics	4
EES 3206	Environmental Chemistry	4
ENV 3002		4
ENV 3040C	Computational Methods in Environmental Engineering	3
	or CGN 3421 or Computer Methods in Civil Engineering	
Credits		15

Semester Six

ENV 3930	Environmental Engineering Ethics Seminar (Course is 2 credits effective 2024)	2
ENV 4041C	Environmental Analysis (Course is 4 credits effective 2024)	4
ENV 4545	Environmental Hydrology	4
ENV 4453	Core 3: Processes in Environmental Engineering	4
Credits		14

Semester Seven

CWR 4202	Hydraulics	3
ENV 4454	Core 4: Environmental Engineering Applications (Critical Tracking)	4
ENV 4892 or ENV 4912	Environmental Engineering Design 1 or Integrated Product and Process Design 1: Environmental Engineering Sciences	3
Technical electives ¹		6
Credits		16

Semester Eight

ENV 4009	Core 5: Environmental Engineering Practice (Critical Tracking)	4
ENV 4893 or ENV 4913	Environmental Engineering Design 2 or Integrated Product and Process Design 2: Environmental Engineering Sciences	3
ENV 4601	Environmental Resources Management (Course is 3 credits effective 2024)	3
Technical electives ¹		6
Credits		16
Total Credits		128

The ENV 4912/ENV 4913 sequence is by application only.

¹ **Technical Elective**

3 credits of technical elective must be 3000 level or higher EES or ENV course(s) not specified above. The remaining technical electives can be any 3000 level or higher course(s) in one of the following departments, with permission of the student's advisor:

- Department of Agricultural and Biological Engineering
- Department of Biomedical Engineering
- Department of Chemical Engineering
- Department of Civil & Coastal Engineering
- Department of Computer & Information Science & Engineering
- Department of Electrical and Computer Engineering
- Department of Industrial Engineering
- Department of Mechanical & Aerospace Engineering
- Engineering Innovation Institute
- Engineering Leadership Institute
- Department of Chemistry
- Department of Geography
- Department of Geological Sciences
- Department of Microbiology and Cell Science
- School of Forest Resources and Conservation
- Department of Soil and Water Science
- Department of Urban and Regional Planning
- Department of Wildlife Ecology and Conservation

Approved Electives**Engineering Graphics or Geographic Information Systems Elective**

Code	Title	Credits
CGN 2328	Technical Drawing and Visualization	3
EML 2023	Computer Aided Graphics and Design	3
GIS 3043	Foundations of Geographic Information Systems	4
GIS 3072C	Geographic Information Systems	3
URP 4273	Survey of Planning Information Systems	3

Academic Learning Compact

Environmental engineering applies engineering and scientific principles to protect and preserve human health and the environment. It embraces broad environmental concerns, including air and water quality, solid and hazardous wastes, groundwater protection and remediation, water resources and management, environmental policy, radiological health, environmental biology and chemistry, systems ecology, water and wastewater treatment and wetlands ecology.

Accredited by the Engineering Accreditation Commission of ABET, <http://www.abet.org> (https://urldefense.proofpoint.com/v2/url/?u=http-3A__www.abet.org&d=DwMGaQ&c=pZJPUDQ3SB9JplYbifm4nt2IEVG5pWx2H-Bf73BYn6kEY-D7Qfs6kPA&m=-KF2G1JwsXcME70kGBMIRYTy2i4YuqEwzRran98WV1M&s=73PhSd8hcuNu3AXlyLst)

ABET EAC Program Educational Objectives, Student Outcomes, and Enrollment and Graduation Numbers can be found on the college website (<https://www.eng.ufl.edu/academics/degree-programs/accreditation/>).

Before Graduating Students Must

- Pass assessment by two or more faculty and/or industrial practitioners of student performance on a major design experience.
- Pass assessment in two courses of individual assignments targeted to each particular learning outcome. Assessment will be provided by the instructor of the course according to department standards.
- Complete an exit interview in your final semester.
- Complete requirements for the baccalaureate degree, as determined by faculty.

Students in the Major Will Learn to Student Learning Outcomes (SLOs)**Content**

1. Apply knowledge of mathematics, science and engineering principles to environmental engineering problems.
2. Design and conduct environmental engineering experiments and analyze and interpret the data collected.

Critical Thinking

3. Design an environmental engineering system, component or process to meet desired needs within realistic economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability constraints.

Communication

4. Communicate technical data and design information effectively in writing and in speech to project stakeholders.

Curriculum Map

I = Introduced; R = Reinforced; A = Assessed

Courses	SLO 1	SLO 2	SLO 3	SLO 4
CHM 2046	I			
CHM 2046L		I		
EES 4102L		A		R
EES 4103		R		
EES 4201	A	R		
EES 4203	R	R		
EMV 3040C	A			
EMV 4121			R	
EMV 4514C			I	A
ENC 3254				I
ENV 4041C		A		R
ENV 4514C			I	A
Capstone			A	A
Design				
Elective				
ENV 4122 or				
ENV 4353 or				
ENV 4432 or				
ENV 4532 or				
ENV 4913				
FE Exam	A		A	
Exit Interview	A	A	A	A

Assessment Types

- Assignments
 - Reports
 - The Fundamentals of Engineering (FE) exam
 - Exit survey
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